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6. (Amended) A method of determining the concentration of an analyte in a sample of low transmissivity, said method comprising:

providing a sample of low transmissivity;  
producing a sample beam from said sample of low transmissivity and a reference beam from a reference using forward and backward beams produced from at least one infrared radiation source;  
producing a null signal from said sample and reference beams; and  
deriving the presence of said analyte in said sample of low transmissivity from said null signal;

wherein each of said beams pass once through an interferometer.

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11. (Amended) The method according to Claim 6, wherein said method further comprises:

producing a forward beam and a backward beam with an interferometer from a single infrared radiation source;  
directing said forward beam into said sample of low transmissivity and directing said backward beam into a reference and collecting a sample beam and a reference beam, respectively;

combining said sample and reference beams to produce a nulled beam;  
detecting said nulled beam with a single detector to obtain a detected null signal; and  
deriving the presence of said analyte in said sample of low transmissivity from said detected null signal.

12. (Amended) The method according to Claim 6, wherein said method further comprises:

producing a forward beam and a backward beam from at least one infrared radiation source;  
directing said forward beam through said sample of low transmissivity and directing said backward beam through a reference to produce a sample beam and a reference beam, respectively;  
introducing said sample and reference beams into an interferometer and producing a null signal from said sample and reference beams following their exit from said interferometer; and

*cont'd*  
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deriving the presence of said analyte in said sample of low transmissivity from said null signal.

*a4*  
16. (Amended) The method according to Claim 14, wherein said reference comprises water.

*a5*  
21. (Amended) A dual beam infrared spectrometer system for use in determining the concentration of an analyte a sample of low transmissivity, said system comprising:  
means for producing a forward beam and a backward beam from at least one infrared source;  
means for producing a sample beam and a reference beam from said forward and backward beams; and  
means for producing a null signal from said sample and reference beams.

22. (Amended) The system according to Claim 21, wherein said device system further comprises an interferometer means.

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23. (Amended) The system according to Claim 21, wherein said device further comprises a means for deriving said analyte concentration from said null signal.

24. (Amended) The system according to Claim 21, wherein said system further comprises a reference.

25. (Amended) The system according to Claim 24, wherein said reference is a variable path length reference.

26. (Amended) The system according to Claim 24, wherein said reference comprises a liquid.

27. (Amended) The system according to Claim 24, wherein said reference comprises a solid.

28. (Amended) The system according to Claim 21, wherein said system further comprises a sample of low transmissivity.